

# **Navy Qualification of Solid Propellant Gas Generators for Aircraft Fire Suppression**

NAVAL SEA SYSTEMS COMMAND



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Propellant Gas Generator Workshop  
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*by  
Philip Renn, Code 5210R  
Indian Head Division, Naval Surface Warfare Center  
Indian Head, Maryland 20640*

# **CAD/PAD Department**

*(Cartridge Actuated Devices/Propellant Actuated Devices)*

- **Lead service activity providing life cycle engineering support**
- **Designated Joint Program Office (JPO) for CAD/PAD**
- **Acquisition management including engineering support**
- **Energetic materials support**
- **Destructive and non-destructive testing**
- **Technical consultation/monitoring for customer projects**
- **Quality evaluations**

## **FSC 1377 items are tested to the requirements of:**

- **MIL-D-21625 Design and Evaluation of Cartridges for Cartridge Actuated Devices.**
- **MIL-I-23659 Initiators, Electric, General Design Specification for**
- **MIL-STD-1385 Preclusion of Ordnance Hazards in Electromagnetic Fields; General Requirements for**
- **Specific aircraft system specification additional requirements**
- **MIL-STD-2000 Propellant, Solid, Characterization of**
- **NAVSEAINST 8020.5A Qualification and Final (Type) Qualification Procedures for Navy Explosives Materials**

# Navy SPGG Test Program

- MIL-D-21625 provides over-all design evaluation
  - Design and construction requirements
  - Explosives selection
  - Electrical requirements (MIL-I-23659 & MIL-STD-1385)
  - Service life
  - Logistic issues (Nomen.,NSN,HC,DWG,markings,etc)
  - Design Feasibility Testing (DFT)
  - Design Verification Testing requirements (DT-IA) (establish design freeze)
  - Service Release Testing requirements (DT-IIA)(Qualification)
  - Packaging requirements
  - Data requirements
- MIL-I-23659 and MIL-STD-1385 provides for electrical requirements
  - MIL-I-23659 provides for design requirements and handling safety
  - MIL-STD-1385 addresses HERO requirements
- The contractor system specifications provide for additional testing not covered by the military specifications and standards
  - Explosive atmosphere
  - NBC
  - Fluid exposure

# **Hazards Of Electromagnetic Radiation on Ordnance (HERO)**

- **MIL-STD-1385 primary HERO specification**
- **NAVSEA OD 30393 HERO Design Guide**
- **HERO referenced in MIL-I-23659 and MIL-D-21625**
- **Naval Surface Warfare Center, Dahlgren is HERO authority for Navy**
- **HERO driven by shipboard EM/RF environments**
- **HERO addressed at system, component and handling levels**

# **Explosive Hazard Classification**

- **CFR 49 Parts 100-199 Transportation**
- **NAVSEAINST 8020.8B DOD Ammunition and Explosives Hazard Classification Procedures**
  - **Joint DOD Explosive Safety Review Board**
- **Current SPGG HC is 1.3C (Class B) from DOT**
- **Goal SPGG HC is 1.4C or S**
  - **Less restrictive storage requirements**
  - **Less costly transportation**

# Service Life Assignment

- Initial 3 years install life and 5 years total life
- Additional testing required to support extending initial installed life\total life
- Navy philosophy is demonstrated reliability verses predicted reliability
- Quality Evaluation (QE) testing of stockpile and fleet returned assets used to support increase in service life.

# SPGG PROGRAMS

- **Current Programs:**
  - F-18E/F      7 SPGG (1 configuration)
  - MV-22        17 SPGG (4 configurations)
- **Potential Program:**
  - F-22
  - KC-136R
- **Future Programs:**
  - JAST
  - Second source plans